EOS Production Sites
Network Performance Report

This is a monthly summary of EOS network performance testing between production sites for November 2006 -- comparing the measured performance against the requirements.

Highlights:

- Mostly highly stable flows

    - Both downgrades below result from requirement increases, not performance reductions.

- Selected ENSIGHT graphs now incorporated into this report
    - (Text color of source name indicates color on graph)

- Requirements Basis:
    - December '03 requirements from BAH.
    - Updated to handbook 1.4.1 (3/22/06)
    - Additional Updates Incorporated:
        - New AIRS reprocessing flows (8/06)
        - GEOS requirements – Flows began this month
        - All LaRC "Backhaul" Requirements removed
        - Extension of TRMM, QuikScat missions

- Significant changes in testing are indicated in Blue, Problems in Red

Ratings Changes:

Upgrade: ↑: GSFC → EROS: Almost Adequate → **Adequate**

Downgrades: ↓ :
GSFC → LaRC: Excellent → **Good**
GSFC → JPL: Good → **Almost Adequate**

(See site discussion below for details)

Ratings Categories:

Rating	Value	Criteria
Excellent:	4	**Total Kbps** > Requirement * 3
Good:	3	1.3 * Requirement <= **Total Kbps** < Requirement * 3
Adequate:	2	Requirement < **Total Kbps** < Requirement * 1.3
Almost Adequate:	1.5	Requirement / 1.3 < **Total Kbps** < Requirement
Low:	1	Requirement / 3 < **Total Kbps** < Requirement / 1.3
Bad:	0	**Total Kbps** < Requirement / 3

Where Total Kbps = Integrated Kbps (where available), otherwise just iperf

Ratings History:
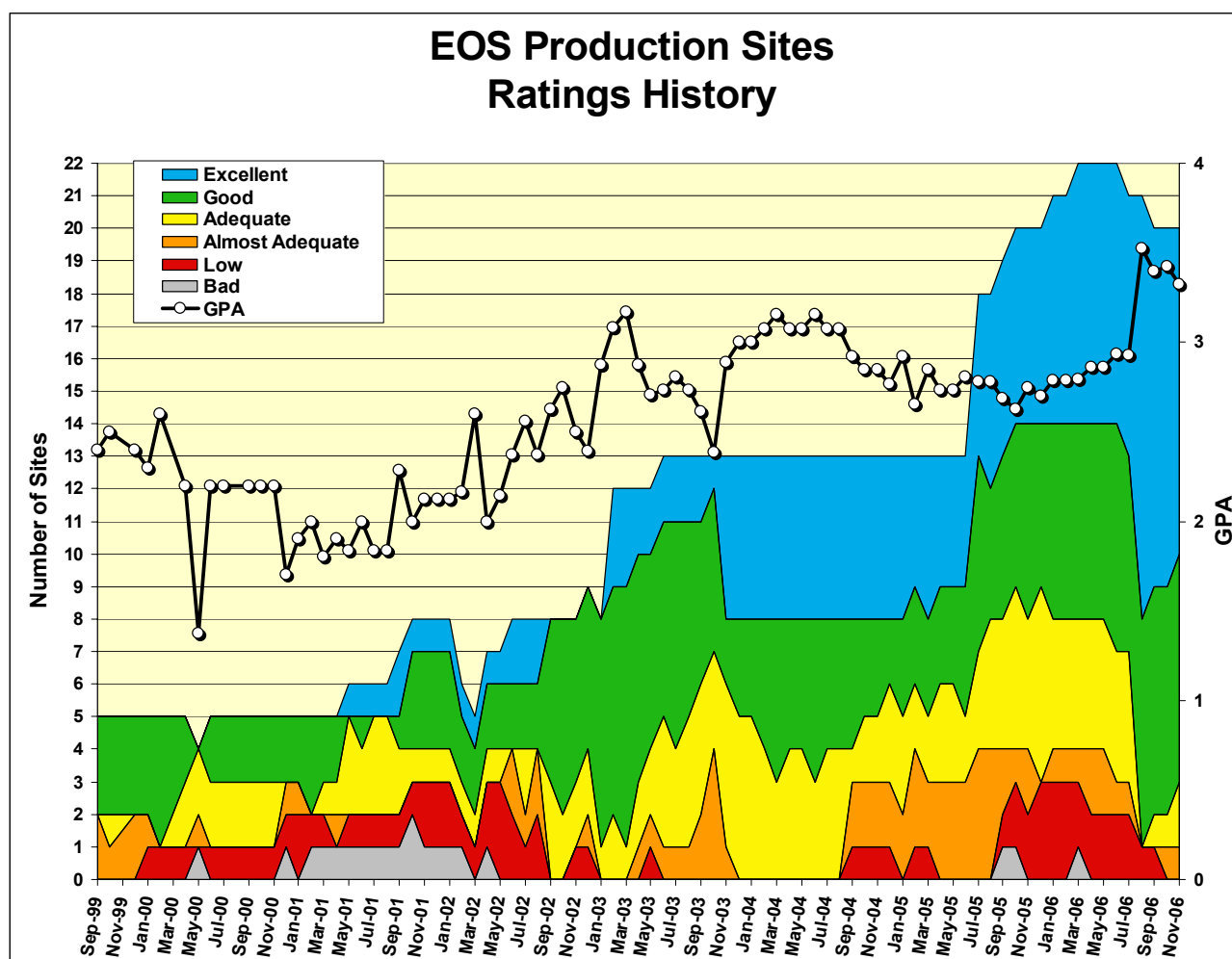
The chart above shows the number of sites in each classification since EOS Production Site testing started in September 1999. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements.

Network Requirements vs. Measured Performance

November 2006		Requirements (mbps)		Testing					Ratings		
Source → Destination	Team (s)	Current	Future	Source → Dest Nodes	Avg User Flow mbps	iperf Avg mbps	Total Avg mbps	Integrated mbps	Rating re Current Requirements		Rating re
		Nov-06	Oct-07						Nov-06	Last Month	Oct-07
GSFC → ASF	QuikScat, Radarsat	n/a	n/a	GSFC-CSAFS → ASF	n/a	1.44	1.44		n/a	n/a	n/a
ASF → LASP	QuikScat	0.02	0.02	ASF → LASP [via IOnet]	n/a	1.08	1.08		Excellent	E	Excellent
EDOS → LASP	ICESat, QuikScat	0.4	0.4	EDOS → LASP [via IOnet]	n/a	7.2	7.2		Excellent	E	Excellent
GSFC → NOAA	QuikScat	0.0	0.0	n/a	n/a	n/a	n/a		n/a	n/a	n/a
GSFC → EROS	MODIS, LandSat	285.4	383.9	ENPL-PTH → EROS PTH	73.7	318.5	392.2	324.7	Adequate	A A	A A
GSFC → JPL (PIP)	AIRS, ISTs	57.6	40.5	GDAAC → JPL-AIRS	8.9	46.4	55.3	47.3	A A	G	Adequate
JPL → GSFC	AMSR-E, MISR, etc.	7.4	7.4	JPL-PTH → GSFC-PTH	n/a	89.1	89.1		Excellent	E	Excellent
JPL → RSS	AMSR-E	2.5	2.5	JPL-PODAAC → RSS	n/a	3.3	3.3		GOOD	G	GOOD
LaRC → JPL	TES, MISR	45.8	39.6	LARC-DAAC → JPL-TES	3.5	80.1	83.6	80.3	GOOD	G	GOOD
JPL → LaRC	TES	52.6	52.6	JPL-PTH → LARC-PTH	n/a	87.5	87.5		GOOD	G	GOOD
GSFC → LaRC	CERES, MISR, MOPITT	71.7	67.2	GDAAC → LDAAC	9.9	205.3	215.2	209.4	GOOD	E	Excellent
LaRC → GSFC	MODIS, TES	0.2	0.2	LDAAC → GDAAC	n/a	170.2	170.2		Excellent	E	Excellent
JPL → NSIDC	AMSR-E	1.3	1.3	JPL-PTH → NSIDC SIDADS	n/a	88.6	88.6		Excellent	E	Excellent
NSIDC → GSFC	MODIS, ICESAT, QuikScat	13.3	13.2	NSIDC DAAC → GDAAC	0.1	117.2	117.2	117.2	Excellent	E	Excellent
GSFC → NSIDC	MODIS, ICESAT, QuikScat	91.0	64.1	GDAAC → NSIDC-DAAC	5.7	90.3	96.0	91.3	Adequate	A	GOOD
NSSTC → NSIDC	AMSR-E	7.5	7.5	NSSTC → NSIDC DAAC	n/a	12.7	12.7		GOOD	G	GOOD
LaRC → NCAR	HIRDLS	5.4	5.4	LDAAC → NCAR	n/a	83.8	83.8		Excellent	E	Excellent
US → JAXA	QuikScat, TRMM, AMSR	2.0	2.0	GSFC-CSAFS → JAXA DDS	0.3	5.5	5.7	5.5	GOOD	G	GOOD
JAXA → US	AMSR-E	1.3	1.3	JAXA DDS → JPL-QSCAT	n/a	3.1	3.1		GOOD	G	GOOD
GSFC → ERSDAC	ASTER	12.5	12.5	ENPL-PTH → ERSDAC	4.7	89.1	93.8	89.5	Excellent	E	Excellent
ERSDAC → EROS	ASTER	26.8	26.8	ERSDAC → EROS PTH	n/a	87.7	87.7		Excellent	E	Excellent
GSFC → KNMI	OMI	3.3	3.3	GSFC-MAX → OMI-PDR	n/a	20.9	20.9		Excellent	E	Excellent

Notes: Flow Requirements include:
TRMM, Terra, Aqua, Aura, ICESAT, QuikScat, GEOS

*Criteria:			Ratings Summary	Nov-06 Score	Req Prev	Oct-07 Score
	Excellent	Total Kbps > Requirement * 3	**Excellent**	10	11	11
	GOOD	1.3 * Requirement <= **Total Kbps** < Requirement * 3	**GOOD**	7	7	7
	Adequate	Requirement < **Total Kbps** < Requirement * 1.3	**Adequate**	2	1	1
	Almost Adequate	Requirement / 1.3 < **Total Kbps** < Requirement	**Almost Adequate**	1	1	1
	LOW	Requirement / 3 < **Total Kbps** < Requirement / 1.3	**LOW**	0	0	0
	BAD	**Total Kbps** < Requirement / 3	**BAD**	0	0	0
			Total	20	20	20
			GPA	3.33	3.43	3.43

This graph shows two bars for each source-destination pair. Each bar uses the same actual measured performance, but compares it to the requirements for two different times (September '06 and October '07). Thus if the requirements increase, the same measured performance will be lower in comparison.
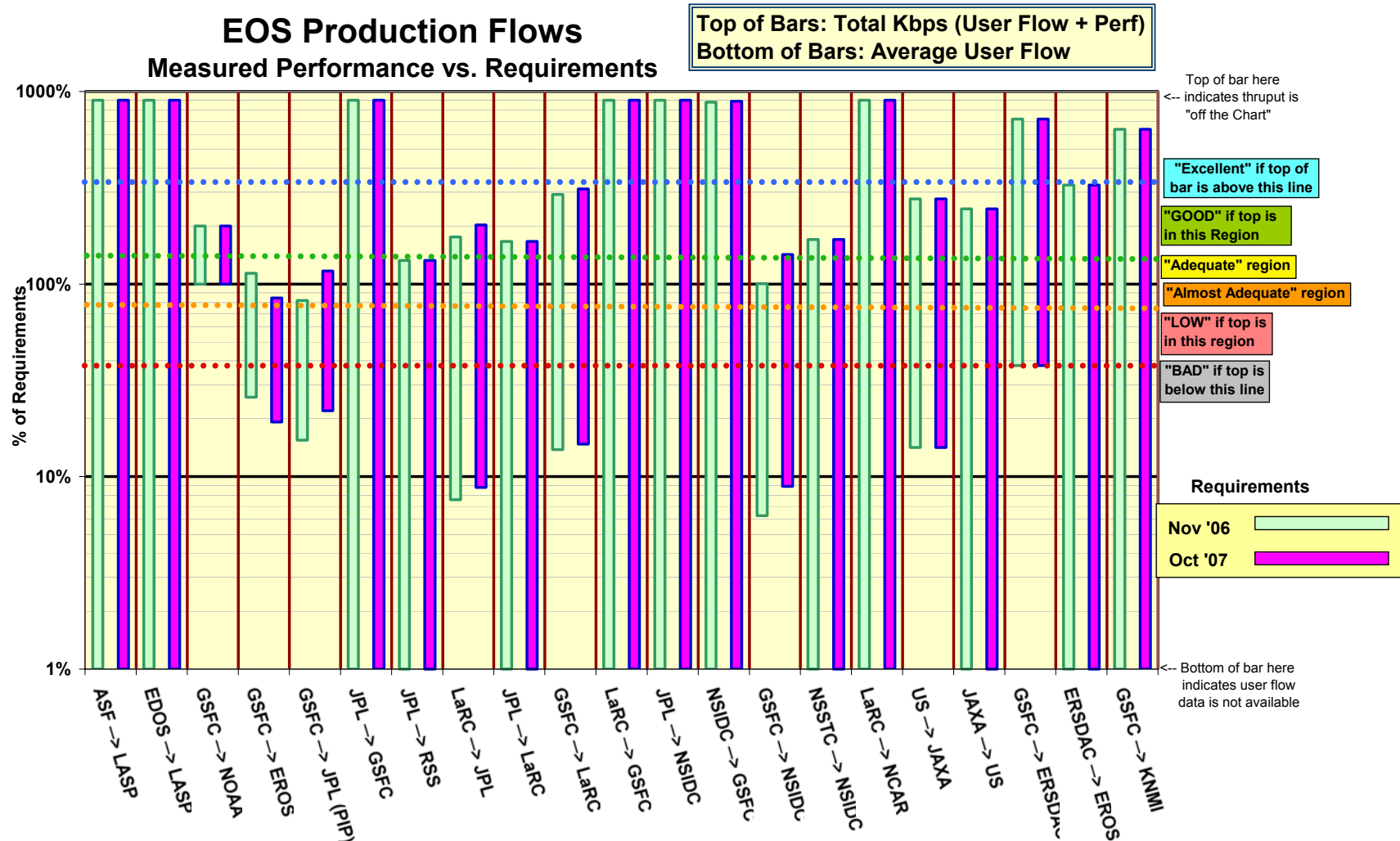
Interpretation: The bottom of each bar is the average measured user flow to a site. Thus the bottom of each bar indicates the relationship between the requirements and actual flows. Note that the requirements include a 50% contingency factor above what was specified by the projects, so a value of 66% would indicate that the project is flowing as much data as requested. The top of each bar represents the integrated measurement – this value is used to determine the ratings.

1) EROS:

Ratings: GSFC → EROS: ↑ Almost Adequate → **Adequate**
ERSDAC→ EROS: Continued **Excellent**

Web Page: http://ensight.eos.nasa.gov/Networks/production/EROS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	**Median**	**Worst**			
GSFC-ENPL-PTH → EROS PTH	326.7	318.5	230.3	73.7	392.2	324.7
GSFC-DAAC → EROS LPDAAC	284.1	196.6	70.0	84.3	280.9	218.9
ERSDAC→ EROS	88.8	87.7	67.5	(via APAN / Abilene / OC-12)		
NSIDC→ EROS	105.5	104.9	98.4			
LaRC→ EROS	92.4	70.9	6.0			
EROS LPDAAC → GSFC DAAC	115.3	90.7	69.4			
EROS LPDAAC → GSFC ECHO	84.4	73.5	51.0			
EROS PTH→ GSFC PTH	346.6	333.9	313.2			

Requirements:

Source → Dest	Date	mbps	Rating
GSFC→ EROS	→Nov '06	285.4	**Adequate**
GSFC→ EROS	Dec '06 → Mar '08	383.9	**Low**
ERSDAC→ EROS	FY '06, '07	26.8	**Excellent**

Comments:

GSFC → EROS: The private OC-12 (622 mbps) circuit from to EROS was switched to a backup on Sept 30, resulting in longer RTT and lower thruput. The primary circuit was restored on Oct. 26, so the performance this month improved somewhat.


EROS Daily Thruput: Oct-Nov 06

The PTH hosts are outside the ECS firewalls, and therefore normally have higher thruput than between the DAACs. This month the PTH tests were switched to use ENPL-PTH rather than GSFC-PTH. Its direct connection to MAX and Abilene more fully demonstrates the capability of the network. The user flow this month was up from 57 mbps last month, and had only a small contribution to the integrated measurement. The rating is based on the "Integrated" measurement, and as usual is lower than the sum of the User Flow + iperf. As a result of the switch to the primary circuit, and the improvement from switching source nodes, the rating improves back to "Adequate".

ERSDAC → EROS: The median thruput from ERSDAC to EDC-PTH (in support of the ERSDAC to EDC ASTER flow, replacing tapes) was stable on the new route (limited by the ERSDAC 100 mbps tail circuit), and is more than 3 times the 26.8 mbps requirement, resulting in an "Excellent" rating.

NSIDC → EROS: The median thruput from NSIDC-SIDADS to EDC-PTH was stable (slight improvement when the shorter path to EROS was restored).

LaRC → EROS: The thruput from LaRC-PTH to EDC-PTH was stable, **but there remains a very strong diurnal pattern (Daily best to worst ratio is 12:1!)**

EROS → GSFC: The thruput for tests from EROS to GSFC were mostly stable this month, except for recovery from the slight drop from EROS-PTH to GSFC-PTH when the shorter path to EROS was restored.
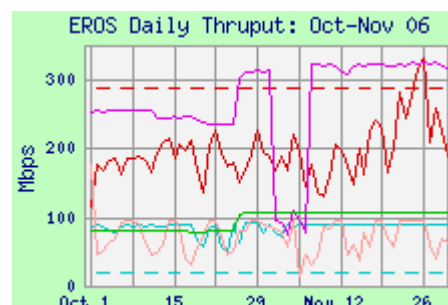
2) JPL:

2.1) JPL ←→ GSFC:

Ratings: GSFC → JPL: ↓ Good → **Almost Adequate**
JPL → GSFC: Continued **Excellent**

Web Pages:

http://ensight.eos.nasa.gov/Organizations/production/JPL_QSCAT.shtml
http://ensight.eos.nasa.gov/Organizations/production/JPL_PODAAC.shtml
http://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml

Test Results:

Source → Dest	NET	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
		Best	Median	Worst			
GSFC-DAAC → JPL-AIRS	PIP	47.4	46.4	26.3	8.9	55.3	47.3
GSFC-CNE → JPL-AIRS	SIP	47.1	42.0	12.2			
GSFC-CSAFS → JPL-QSCAT	PIP	7.5	7.3	4.9			
GSFC-CSAFS → JPL-QSCAT-BU	PIP	7.3	7.2	4.9			
GSFC-PTH → JPL-QSCAT	PIP	87.4	72.2	31.2			
GSFC-PTH → JPL-PODAAC	PIP	86.1	79.6	38.1			
GSFC-CNE → JPL-MISR	SIP	39.8	22.0	4.5			
JPL-PTH→ GSFC PTH	PIP	89.2	89.1	67.1			
JPL-PODAAC→ GSFC DAAC	PIP	39.4	26.7	6.1			

Requirements:

| Source → Dest	Date	Mbps	Rating
GSFC → JPL Combined	FY '07	57.6	**Almost Adequate**
JPL → GSFC combined	CY '06-09	7.4	**Excellent**

Comments:

GSFC → JPL:.

AIRS: Performance from GSFC (DAAC and CNE) to JPL-AIRS was very stable this month, after dramatically improving with the NISN SIP WANR upgrade in April.

The requirement was updated last month and again this month to reflect increased AIRS reprocessing requirements and GEOS flows (was 22.2 mbps last month). Performance from the GSFC-DAAC is used as the basis of the ratings, and is now about 20% below this increased requirement (for all PIP flows combined), so the rating drops to "Almost Adequate".

QSCAT: The performance from CSAFS was very stable this month, limited by the CSAFS 10 mbps Ethernet connection -- this flow did not significantly benefit from the WANR upgrade. A test from GSFC-PTH was added this month, to show the benefit of the WANR upgrade – thruput from GSFC-PTH is about 10x as much as from CSAFS.

JPL → GSFC: The previous JPL-PODAAC to GSFC-DAAC testing was replaced by JPL-PTH to GSFC-PTH testing to better reflect the network capabilities. The rating remains "Excellent".
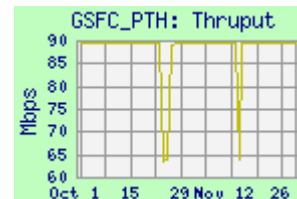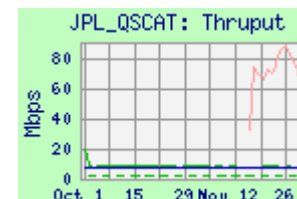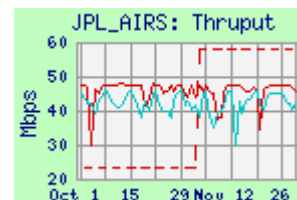
2.2) JPL ←→ LaRC

Ratings: LaRC → JPL: Continued **Good**
JPL→ LaRC: Continued **Good**

Web Pages:
http://ensight.eos.nasa.gov/Organizations/production/JPL_TES.shtml
http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
LaRC PTH → JPL-TES	90.0	84.8	66.2	3.5	88.3	85.0
LaRC DAAC → JPL-TES	90.4	80.1	50.3	3.5	83.6	80.3
LaRC PTH → JPL-TES sftp	1.8	1.8	1.7			
LaRC DAAC → JPL-MISR	80.5	65.7	24.1			
JPL-PTH → LaRC PTH	88.6	87.5	86.7			

Requirements:

Source → Dest	Date	Mbps	Rating
LaRC DAAC → JPL-TES	FY '07	29.8	**Good**
LaRC DAAC → JPL-MISR	FY '07	18.5	**Good**
LaRC DAAC → JPL-Combined	FY '07	45.8	**Good**
JPL → LaRC	FY '07	52.6	**Good**
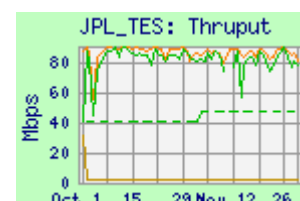
Comments:

LaRC→ JPL: Performance remained mostly stable, with a bit more congestion indicated -- after improving dramatically with the NISN WANR upgrade. The combined requirement increased this month, with the addition of GEOS flows (was 39.6 mbps previously). The rating remains "Good". Sftp results are much lower than iperf, due to TCP window limitations (a patch to increase this window is awaited).

JPL → LaRC: This requirement is for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. The measured thruput was also stable this month after improving dramatically with the NISN WANR. The rating remains "Good".
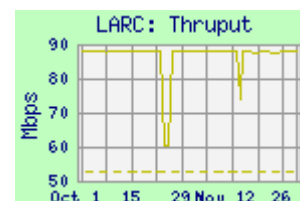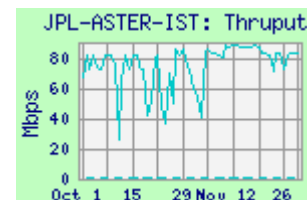
2.3) ERSDAC → JPL ASTER IST

Rating: Continued **Excellent**

Web Page:http://ensight.eos.nasa.gov/Organizations/production/JPL_PTH.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER-IST	85.6	81.6	37.8

Comments: This test was initiated in March '05, via APAN replacing the EBnet circuit. The typical 82 mbps must be well in excess of the requirements (IST requirements are generally 311 kbps).

3) Boulder CO:

3.1) GSFC ← → NSIDC DAAC: Ratings: NSIDC → GSFC: Continued **Excellent**
GSFC → NSIDC: Continued **Adequate**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/NSIDC.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GSFC-DAAC → NSIDC-DAAC	108.5	90.3	31.0	5.7	96.0	91.3
GSFC-PTH → NSIDC-DAAC	113.8	102.8	36.9			
GSFC-ISIPS → NSIDC (iperf)	113.3	91.2	27.1			
GSFC-ISIPS → NSIDC (ftp)	22.0	21.7	5.9			
NSIDC DAAC → GSFC-DAAC	123.8	117.2	25.2			
NSIDC → GSFC-ISIPS (iperf)	84.7	82.8	23.9			

NSIDC Daily Thruput: Oct-Nov 06

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → NSIDC	Oct-Dec '06	91.0	Adequate
GSFC → NSIDC	2007	64.1	Good
NSIDC → GSFC	CY '06	13.3	Excellent
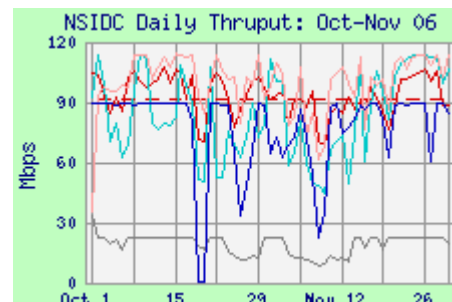
Comments: GSFC → NSIDC: This rating is based on testing from GDAAC to the NSIDC DAAC. The iperf and integrated thruput values were stable this month, after increasing about 25% due to the NISN WANR upgrade. This requirement varies from month to month, based on planned ICESAT reprocessing. This month the reprocessing **IS** included. The Integrated thruput is above this higher requirement but not by more than 30%, so the rating drops to "Adequate". Note that in September (also next January) the reprocessing **was not** included – the requirement was lower, so the same performance would have rated "Good".

GDAAC: Thruput

NSIDC → GSFC: Performance from NSIDC to GSFC remained stable, after improving dramatically with the NISN WANR upgrade in August; the rating remains "Excellent".

GSFC-ISIPS ← → NSIDC: Performance between ISIPS and NSIDC is at nominal levels for the circuit capacity. Iperf thruput was much higher than ftp due to window size limitations.
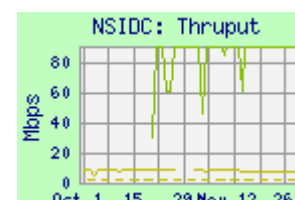

GSFC_ISIPS: Thruput
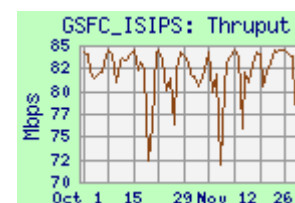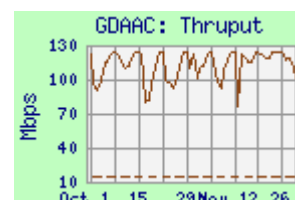
3.2) JPL → NSIDC: Ratings: JPL → NSIDC: Continued **Excellent**

Test Results:

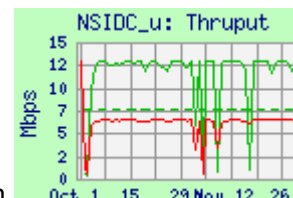| Source → Dest	Medians of daily tests (mbps)			Requirement
	Best	Median	Worst	
JPL PTH → NSIDC-SIDADS	88.8	88.6	18.4	1.34
JPL PODAAC → NSIDC-SIDADS	7.2	7.2	6.5	1.34

Comments: In October an additional test from JPL-PTH to NSIDC-SIDADS was added to more fully assess the true network capability – the thruput is much higher than from PODAAC. Thruput from PODAAC was stable this month after the previous improvement from the NISN WANR upgrade. The rating remains "Excellent".

NSIDC: Thruput

3.3) NSSTC → NSIDC: Ratings: NSSTC → NSIDC: Continued Good

Web Pages: http://ensight.eos.nasa.gov/Missions/aqua/NSIDC_u.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	**Median**	**Worst**	**Requirement**
NSSTC → NSIDC DAAC (iperf)	12.9	12.7	0.2	7.5
NSSTC → NSIDC DAAC (ftp)	6.4	6.3	0.3	

Comments: NSSTC (Huntsville, AL) sends AMSR-E L2/L3 data to NSIDC. Median thruput is stable and more than 30 % over the requirement, so is rated "Good"

3.4) LASP: Ratings: GSFC → LASP: Continued **Excellent**
ASF → LASP: Continued **Excellent**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/LASP.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	**Median**	**Worst**	**Requirement**
ASF → LASP	1.34	1.10	0.45	0.024
GSFC EDOS → LASP	13.7	7.2	2.9	0.4
GSFC PTH → LASP (iperf)	20.3	11.1	3.9	
GSFC PTH → LASP (sftp)	0.44	0.44	0.42	

Comments: The requirements are now divided into ASF and GSFC sources:

ASF → LASP: Thruput from ASF to LASP is limited by ASF T1 circuit, rating "Excellent", due to the modest requirement
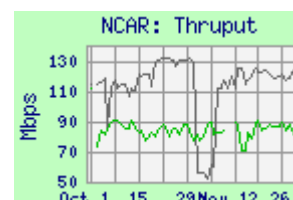
GSFC → LASP: GSFC → LASP iperf thruput is well above the requirement; the rating continues "Excellent. But sftp thruput is MUCH lower than iperf, due to window size limitations. A patch is available.
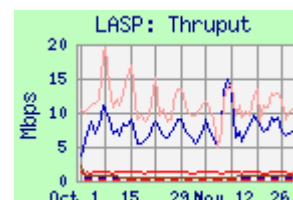
3.5) NCAR: Ratings: LaRC → NCAR: Continued **Excellent**
GSFC → NCAR: Continued **Excellent**

Web Pages http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	**Median**	**Worst**	**Requirement**
LaRC → NCAR	89.3	83.8	43.4	5.4
GSFC → NCAR	131.2	117.5	92.9	5.1

Comments: NCAR (Boulder, CO) is a SIPS for MOPITT (Terra, from LaRC), and has MOPITT and HIRDLS QA (Aura, from GSFC) requirements. Performance from LaRC (via NISN to MAX to Abilene) improved (from 22 mbps previously) with the NISN WANR SIP upgrade in late July. Thruput is now well above 3 x the requirement, so the rating remains "Excellent".

From GSFC the median thruput is steady at well over 3 x the requirement, so that rating also remains "Excellent".

4) GSFC ←→ LaRC:

Ratings: GSFC → LaRC: ↓ Excellent → **Good**
LDAAC → GDAAC: Continued **Excellent**

Web Pages: http://ensight.eos.nasa.gov/Organizations/production/LARC.shtml
http://ensight.eos.nasa.gov/Organizations/production/LATIS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GDAAC → LDAAC	269.3	205.3	78.4	9.9	215.2	209.4
GSFC-NISN → LaTIS	92.5	83.7	33.8			
GSFC-PTH → LaRC-PTH	93.4	92.3	82.2			
GSFC-PTH → LaRC-ANGe	84.0	81.8	68.6			
LDAAC → GDAAC	244.1	170.2	50.9			
LDAAC → GSFC-ECHO	87.8	82.9	50.0			

Requirements:

| Source → Dest	Date	Mbps	Rating
GSFC → LARC (Combined)	Nov '06 – Feb '07	71.7	**Good**
LDAAC → GDAAC	FY '07	0.2	**Excellent**

Comments: Performance of all GSFC ←→ LaRC flows improved dramatically with the NISN WANR upgrade in August.

GSFC → LaRC: The combined requirement had been split between LDAAC and LaTIS when the flows were on separate circuits, but is now treated as a single requirement as they have been both on PIP since Feb '05. The rating is now based on the GDAAC to LaRC ECS DAAC thruput, compared to the combined requirement. This requirement increased this month with the addition of GEOS flows (was 67 mbps last month).

Median by GMT Hour

With this increased requirement, the **GSFC→ LaRC ECS DAAC** median thruput is now slightly below 3 x the combined requirement, so the combined rating drops to "Good". Note also the significant diurnal variations (3.4:1 ratio of median daily best to median daily worst– and improvement on weekends. Also note: the lower peaks (around 90 mbps) to LaTIS, LaRC-PTH, and LaRC-ANGe are limited by their 100 mbps LAN connections.

LaRC → GSFC: Performance from LDAAC → GDAAC was stable this month. The thruput remained much more than 3 x this requirement, so the rating continues as "Excellent". However, severe diurnal variation is also observed on this circuit, with the daily peak almost 5x the daily worst.
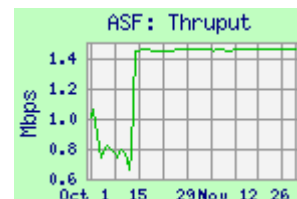

The thruput from LDAAC to GSFC-ECHO is lower than LDAAC to GDAAC due to a 100 mbps LAN connection.
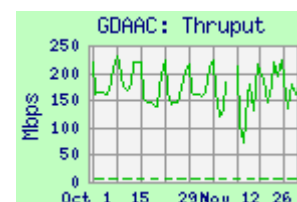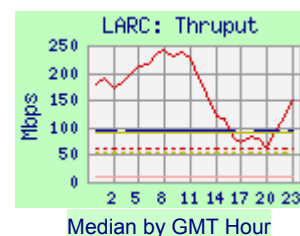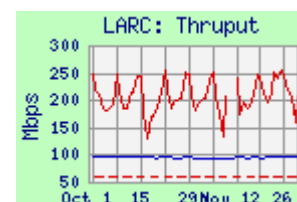
5) ASF   <u>Rating</u>: Continued **Excellent**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/ASF.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	**Median**	**Worst**
GSFC-CSAFS → ASF	1.45	1.44	1.25
ASF → LASP	1.33	1.08	0.44
ASF → GSFC-CSAFS	1.38	1.30	0.70

Comments: Testing to ASF transitioned to IOnet in April '06 – accordingly, testing was discontinued from ASF to NOAA and JPL-SEAPAC; also user flow data is no longer available.

Performance to ASF was degraded for almost the first two weeks of October, due to a carrier problem with the circuit. After that the performance has been consistent with the T1 (1.5 mbps) circuit capacity.

Performance from ASF to LASP and CSAFS was not affected by this circuit problem; the rating therefore remains "Excellent".

Requirements:

Source → Dest	Date	kbps	Rating
ASF→ LASP	FY '07	24	**Excellent**
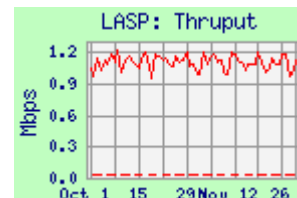
6) NOAA NESDIS: <u>Rating</u>: n/a

Web Page: http://ensight.eos.nasa.gov/Organizations/production/NOAA_NESDIS.shtml

Requirements:

Source → Dest	FY	Mbps	Rating
GSFC-CSAFS → NESDIS	'06	0.19	**N/A**

Comments: The NOAA EMSnet test host was discontinued in early August. NOAA has been requested to provide a new test machine for the "Class" system.

This section will therefore be removed from future reports until testing has resumed.

7) US ←→ JAXA:

Ratings: JAXA → US: Continued **Good**
US → JAXA: Continued **Good**

Web Pages   http://ensight.eos.nasa.gov/Organizations/production/JAXA_EOC.shtml
http://ensight.eos.nasa.gov/Organizations/production/JPL_QSCAT.shtml
http://ensight.eos.nasa.gov/Organizations/production/GSFC_SAFS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GSFC-CSAFS → JAXA-DDS	5.78	5.47	2.47	0.30	5.77	5.49
GSFC–EDOS → JAXA-azusa	8.15	7.93	3.15			
GSFC-ENPL → JAXA-azusa	76.1	60.1	28.8			
GSFC-PTH → JAXA-azusa	54.3	34.7	17.8			
GSFC-PTH → JAXA (sftp)	0.84	0.83	0.78			
JAXA-DDS → JPL-QSCAT	3.18	3.15	2.72			
JAXA-DDS → GSFC-DAAC	1.99	1.96	1.92			
JAXA-azusa→ GSFC-MAX	8.98	8.86	8.50			

JAXA-DDS: Thruput
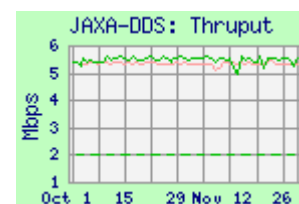
Requirements

Source → Dest	Date	mbps	Rating
GSFC → JAXA	Nov '03 – Mar '08	1.99	Good
JAXA → US	Nov '03 – Mar '08	1.28	Good

Comments: The US → JAXA requirement was updated in October, to reflect the extension of the TRMM and QScat missions (the requirement was 1.43 mbps previously). The JAXA flows were moved to APAN / Sinet on August 17. Prior to this switch the flows used a dedicated 2 mbps ATM circuit from JPL to JAXA, using NISN PIP between GSFC and JPL. Performance on that circuit was stable at about 1.5 mbps.

US → JAXA: Performance from GSFC improved substantially with the switch to APAN / Sinet, and is now limited by TCP window size and a 10 mbps Ethernets on JAXA's DDS node, and the GSFC-EDOS-Mail node. Thruput was stable this month, but with the increased requirement, the thruput is below 3 x the requirement, so the rating remains "Good". But thruput using sftp between these same nodes is much lower, limited by ssh window size. A patch is available, but is not installed.

JAXA-azusa: Thruput
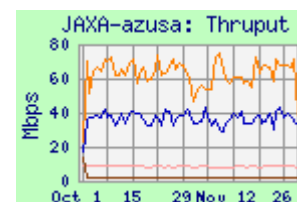
Performance from GSFC-PTH and GSFC-ENPL to the azusa test node at JAXA is not limited by a 10 mbps Ethernet, so its much higher performance more accurately shows the capability of the network.

Performance testing from JPL to JAXA did not run again this month – firewall change has been requested at JAXA.

JAXA → US: Performance improved with the switch to APAN / Sinet in August, and is now also limited by TCP window size and 10 mbps Ethernets. But it has not yet been retuned to fully utilize the increased network capability. The thruput from JAXA to JPL was more than 30% over the requirement, but less than 3 x, so the rating remains "Good".


JPL_QSCAT: Thruput

GDAAC: Thruput

GSFC_MAX: Thruput
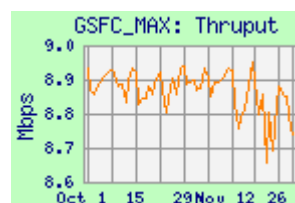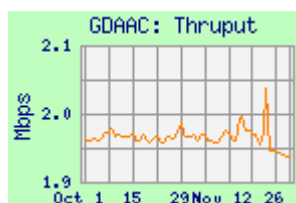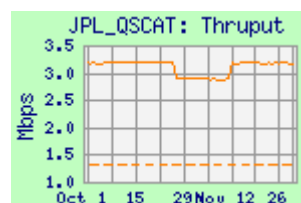
8) ERSDAC ←→ US: Rating: Continued `Excellent`

Web Page : http://ensight.eos.nasa.gov/Organizations/production/ERSDAC.shtml

US → ERSDAC Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GDAAC → ERSDAC	34.7	29.4	16.1			
GSFC ENPL (FE) → ERSDAC	90.0	89.1	63.0	4.7	93.8	89.5
GSFC-EDOS → ERSDAC	5.9	5.9	2.6			

Requirements:

Source → Dest	FY	Mbps	Rating
GSFC → ERSDAC	'03 - '07	12.5	`Excellent`

ERSDAC: Thruput

Comments: Dataflow from GSFC to ERSDAC was switched to APAN in February '05, and the performance above is via that route.
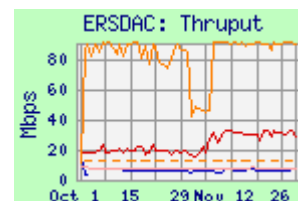
The thruput from GDAAC is apparently limited by packet loss at the GigE to FastE switch at Tokyo-XP. The GigE GDAAC source does not see any bottlenecks until this switch (The Abilene and APAN backbones are 10 Gbps), and thus exceeds capacity of the switch's FastE output circuit. But the FastE connected GSFC-ENPL node is limited to 100 mbps by its own interface, so does not suffer performance degrading packet loss – its performance is much higher. Testing from EDOS to ERSDAC is currently limited by a 10 mbps Ethernet in its path – a waiver request has been initiated to use the FastE interface.

The requirement now includes the level 0 flows which used to be sent by tapes. The thruput increased this month on Nov 6 (and got steadier from GSFC-ENPL at the same time). It continues to be more than 3 x this requirement, so the rating remains "Excellent".

ERSDAC → US Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER IST	81.8	72.8	14.1
ERSDAC → EROS	88.1	85.5	21.1

Requirements:

Source → Dest	Date	mbps	Rating
ERSDAC→ EROS	FY '06	26.8	`Excellent`

Comments:

ERSDAC → JPL-ASTER-IST: This test was initiated in March '05, via APAN replacing the EBnet circuit. The results are much higher than previously via the 1 mbps ATM circuit, and should be considered "Excellent" (no requirement is specified at this time – but other IST requirements are 311 kbps)

JPL-ASTER-IST: Thruput
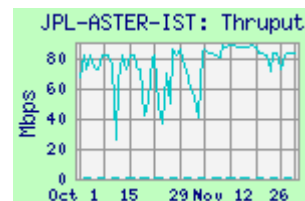
ERSDAC → EROS: The results from this test (in support of the ERSDAC to EROS ASTER flow, replacing tapes) were stable this month. Thruput improved to these present values in April '05 after the Abilene to NGIX-E connection was repaired. The median thruput is more than 3 x the requirement, so the rating remains "Excellent"


EROS: Thruput
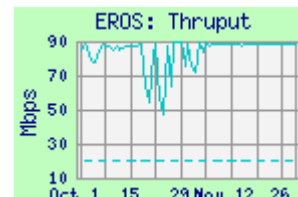
9) Other SIPS Sites:

Web Pages   http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml
          http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml

Test Results:

| Source → Dest	Medians of daily tests (mbps)			Requirement	Rating
	Best	Median	Worst		
JPL → RSS	5.36	3.28	1.09	2.4	Continued **Good**
GSFC → KNMI-ODPS	21.3	20.9	19.5	3.3	Continued **Excellent**

Comments:

9.1 RSS: RSS (Santa Rosa, CA) is a SIPS for AMSR-E, receiving data from JPL, and sending its results to GHCC (aka NSSTC) (Huntsville, AL). The NISN dedicated circuit from JPL to RSS was upgraded in August '05 from 2 T1s (3 mbps) to 4 T1s (6 mbps) to accommodate the larger RSS to GHCC flow. This month the thruput was noisy but mostly stable.
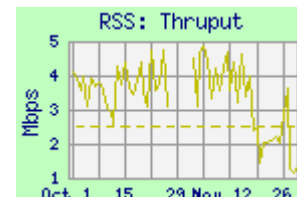
The iperf thruput is again more than 30% above the requirement, so the rating remains "Good" (had dropped to "Low" in September due to heavy user flow). User flow data remains unavailable on this circuit.

Note that with the present configuration (passive servers at both RSS and GHCC), the RSS to GHCC performance cannot be tested.

9.2 KNMI: KNMI (DeBilt, Netherlands) is a SIPS and QA site for OMI (Aura). The route from GSFC is via MAX to Abilene, peering in NY with Surfnet's 10Gbps circuit to Amsterdam. The rating is based on the results to the ODPS primary server, protected by a firewall, and was quite a bit lower than previously to the Backup server, which was outside the firewall. Thruput remains well above 3 x the requirement, rating "Excellent".
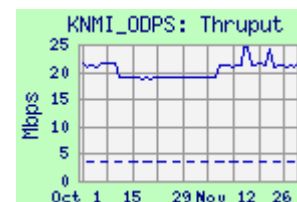
See also Section 3 (Boulder) for data on NSSTC → NSIDC and NCAR testing.